

II. REMARKS

Claims 39, 40 and 41 have been canceled without prejudice and new claims 44-46 have been added. In particular, new independent claim 44 corresponds to claim 39 rewritten in independent form. Thus, new claim 44 has the same scope as previous claim 39. New independent claim 45 corresponds to claim 40 rewritten in independent form; thus, new claim 45 has the same scope as previous claim 40. New independent claim 46 corresponds to claim 41 rewritten in independent form; thus, new claim 46 has the same scope as previous claim 41.

The present amendment adds no new matter to the above-captioned application.

Applicants point out that the Examiner has completely failed to consider the further patentable limitation of independent claims 42 and 43 wherein a “photosensitive resin composition...comprises: ...a monomer having at least one polymerizable ethylenically unsaturated group in the molecule thereof, wherein the monomer is bisphenol A polyoxyalkylene diacrylate, or contains bisphenol A polyoxyalkylene dimethacrylate as a component.” The Examiner also has completely failed to consider the further patentable limitation of independent claims 44-46 wherein “the protecting film...is made of resin filtered after thermal melting.”

Applicants respectfully request the Examiner consider each and every element recited in the claims.

A. The Rejections

Claims 1-10, 13-19, 21-25 and 28-43 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Taguchi (U.S. Patent 4,360,582, hereafter the “Taguchi Patent”) in view of

Mannion (U.S. Patent 5,198,484, hereafter the "Mannion Patent"). Claims 12 and 27 stand rejected under 35 U.S.C. 103(a) as unpatentable over Taguchi (U.S. Patent 4,360,582) in view of Mannion (U.S. Patent 5,198,484), and further in view of Hoffman (U.S. Patent 4,710,446, hereafter the "Hoffman Patent").

Applicants respectfully traverse the rejection and request reconsideration of the present application for the following reasons.

B. The Invention

The present invention provides a photosensitive film usable in metal etching fabrication of lead frames, metal masks, and the like, with reduced generation of air voids which cause formation of defective patterns and breakage of wire. The problem solved by the present invention is to reduce the formation of air voids on a substrate, such as a metal, after removing the protecting film from the photosensitive resin layer formed on a support film. The present inventors have found for the first time that such air voids are caused by very fine fish eyes, difficult to find with the naked eye, of the protecting film in the photosensitive film.

Furthermore, formation of air voids is related to film thickness of the photosensitive layer, so a thinner photosensitive resin layer results in more air voids. This finding is also important to the present invention.

In accordance with the present invention, a first embodiment is provided having the elements recited in claim 1, a second embodiment is provided having the elements recited in claim 19, a third embodiment is provided having the elements recited in claim 36, a fourth embodiment is provided having the elements recited in claim 38, a fifth embodiment is provided having the elements recited in claim 42, a sixth embodiment is provided having the

elements recited in claim 43, a seventh embodiment is provided having the elements recited in claim 44, an eighth embodiment is provided having the elements recited in claim 45, and a ninth embodiment is provided having the elements recited in claim 46. Each of these embodiments is directed to a photosensitive film wherein “the number of fish eyes having a diameter of at least 80 μm included in said protecting film” does not exceed “5 fish eyes/ m^2 when measured under a microscope at a multiplication of 100,” and each of these embodiments require the photosensitive resin layer to have a “film thickness of 5 to 50 μm .”

Various other embodiments are recited in the dependent claims. One important advantage of the photosensitive films, in accordance with the present invention, is the size and number of fish eyes in the fish eye population. The relatively small and few fish eyes in the protecting film of the photosensitive films of the present invention improve quality and yield of semiconductor elements when manufacturing semiconductor elements.

C. Applicants' Arguments

The Examiner's rejections are all predicated on the notion that the “protecting film (C) would have the same number of fish eyes at the given diameter no matter how it is evaluated” (Office Action, dated January 11, 2005, at 2, lines 2-7; and Office Action, dated March 24, 2004, at 2, lines 11-16). This observation is, quite simply, erroneous. More fish eyes can be seen at a magnification of 100 than can be seen with the naked eye, for example. As a further simple example, if no fish eyes are seen with the naked eye that does not mean that no fish eyes will be seen at a multiplication of 100. This is particularly true if defects of 80 μm , as recited in the claims, are measured, since those defects are below the limit of detection with the naked eye. See discussion below.

From this erroneous factual predicate, the Examiner concludes that the limitation wherein “the number of fish eyes having a diameter of at least 80 μm included in said protecting film (C) does not exceed 5 fish eyes/ m^2 when measured under a microscope at a multiplication of 100” does not further limit the claims.

The Examiner’s conclusion is untenable for the plain reason that whatever measurement tool is used to quantify the population of fish eyes per square meter, like any other physical parameter, will have a sensitivity and a degree of measurement error. Therefore, when the claims recite the use of a particular measurement tool for characterizing the fish eye population (as claimed, observation under a microscope at a multiplication of 100), comparison of fish eye defects with other materials is meaningful only when comparable methods of measuring fish eyes have been employed. Otherwise, no meaningful comparison in numerically quantified fish eye defects can be made between different films (See Ishikawa’s Second Declaration, §§ 20 and 21, of record).

Thus, for the reasons explicitly set forth in Amendment (G), filed September 24, 2004, at 15, line 16, to at 19, line 4, which is incorporated herein by reference, the recitation of “the number of fish eyes having a diameter of at least 80 μm included in said protecting film (C) does not exceed 5 fish eyes/ m^2 when measured under a microscope at a multiplication of 100” such as recited in claim 1 does further limit the claims.

D. The Prior Art Rejections

A prima facie case of obviousness requires a showing that the scope and content of the prior art teaches each and every element of the claimed invention, and that the prior art provides some teaching, suggestion or motivation to combine the references to produce the

claimed invention. In re Oetiker, 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992); and In re Vaeck, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

In the present case, the scope and content of the subject matter taught by the art of record is insufficient to make a prima facie showing of obviousness. In addition, the art of record fails to provide some teaching, suggestion or motivation to combine the references to produce the claimed invention.

i. The Taguchi Patent

The Taguchi Patent teaches a “photopolymerizable element” for producing photoresists used in manufacturing printed circuit boards that includes: (1) a layer of a photopolymerizable composition, (2) a film support laminated to the composition layer and optionally (3) a strippable protective film (see Abstract). The thickness of the composition layer is 0.1 to 1,000 μ (col. 9, lines 15-19) with the thickness of the film support being 5 to 100 μ (col. 9, lines 20-22) and the thickness of the protective film being 8 to 80 μ (col. 10, lines 22-23). Numerous materials are available for making the protective layer, but there is no mention of using low quality LDPE.

More specifically, the Taguchi Patent teaches that the protective film is provided on one surface of the photopolymerizable layer and the film support is laminated onto the other surface, wherein the protective layer is used for preventing blocking at the winding step and adhesion of dust during handling (col. 3, lines 62-68). The Taguchi Patent teaches that the film support is a transparent film capable of being dissolved or dispersed in a developer, and that the film support is selected from the group consisting of methyl methacrylate homopolymer and copolymers, vinyl chloride homopolymer and copolymers, polyvinyl

alcohol, and mixtures thereof (col. 4, lines 51-62). The Taguchi Patent teaches the use of trimethylolpropane trimethacrylate as a photopolymerizable monomer for making a photopolymerizable layer, but that other materials such as the methyl methacrylate homopolymer and copolymer and a list of other compounds would be used as an organic polymer binder (col. 5, line 27, to col. 6, line 23).

The Taguchi Patent teaches that the use of polyethylene terephthalate as the film support has certain disadvantages, such a tendency for the photosensitive layer to be destroyed when stripping the film support when the thickness of the photosensitive layer is reduced (col. 2, line 38, to col. 3, line 8). The Taguchi Patent also teaches that the protective film could be selected from a polyethylene terephthalate film, a polypropylene film, a polyethylene film, a cellulose triacetate film, a cellulose diacetate film, a polyamide film, a polytetrafluoroethylene film, a paper, a polyethylene-laminated paper and a polypropylene-laminated paper (col. 10, lines 15-24).

It is important to note that Taguchi teaches that the protective film (10), such as shown in Figure 4, is an optional feature of the photopolymerizable element (col. 14, lines 57-60). Furthermore, it is important to note that while Taguchi provides certain examples of a photosensitive element utilizing the optional protective film, these examples focus primarily on the use of a polyethylene film (col. 18, lines 9-52).

Furthermore, the Taguchi Patent explains the use of the photopolymerizable element referred to in Figures 1 to 9 (col. 14, line 43, to col. 15, line 35). As shown in Figure 5, the protective film (10), (e.g., a polypropylene film) is peeled off and the surfaces of the photopolymerizable layers (9) and (12) are applied to both surfaces of the copper-clad insulating substrate, whereby at least both openings of each of the through-holes (4), (5) are

covered with the photopolymerizable layers (9) and (12), (See Fig. 5 and col. 14, line 59, to col. 15, line 1). The diameter of the through-holes (4) and (5), which have no relation to the fish eyes, are by far larger than the size of fish eyes. In view of these teachings, it is evident that the Taguchi Patent is not addressing the problem solved by the present invention.

As admitted by the Examiner (Office Action, dated November 21, 2001, at 5, lines 7-8), the Taguchi reference does not teach “explicit details pertaining to the protective film”, including the claimed feature of a protecting layer that has a “number of fish eyes having a diameter of at least 80 μm that does not exceed 5 fish eyes/ m^2 when measured under a microscope at a multiplication of 100.” The Examiner reiterates in the outstanding Office Action, and in previous Office Actions, that “Taguchi is silent on fish eyes” (Office Action, dated January 11, 2005, at 3, line 11; Office Action, dated March 24, 2004, at 4, line 1; and Office Action, dated August 25, 2005, at 3, lines 16-17).

The Examiner has conceded the fact that conventional polypropylene films vary in their characteristics and contain fish eyes exceeding those recited by the claims of the present application (Office Action, dated August 25, 2005, at 7, lines 13-16). Therefore, the Taguchi Patent does not teach, or even suggest, “the number of fish eyes having a diameter of at least 80 μm included in said protecting film (C) does not exceed 5 fish eyes/ m^2 when measured under a microscope at a multiplication of 100” as recited in independent claims 1, 19, 36, 38 and 42-46. However, this is not the only deficiency in the teachings of the Taguchi Patent, which also fails to teach, or even suggest, “the photoinitiator...contains 2,4,5-triarylimidazole dimmer” as recited in claims 12 and 27 as admitted by the Examiner (Office Action, dated August 25, 2005, at 6, lines 4-10). The Taguchi Patent also does not teach, or even suggest, that “the photosensitive resin composition in the photosensitive resin layer comprises: i. a

binder polymer formed by copolymerizing acrylic acid or methacrylic acid and alkyl esters thereof as constituent monomers; ii. a monomer having at least one polymerizable ethylenically unsaturated group in the molecule thereof, wherein the monomer is bisphenol A polyoxyalkylene diacrylate, or contains bisphenol A polyoxyalkylene dimethacrylate as a component; and iii. a photopolymerization initiator” as recited in claims 42 and 43, and it also does not teach, or suggest, “the protecting film... is made of resin filtered after thermal melting” as recited in claims 44-46.

ii. The Mannion Patent

United States Patent 5,198,484 to Mannion (hereafter, the Mannion Patent) teaches a “polyolefin composition containing ultrafine sorbitol and xylitol acetals” wherein a clarifying agent is incorporated into a semi-crystalline resin (See Abstract). The purpose of the process and composition taught by Mannion is to address the formation of “white points,” which are bubbles formed when articles are fabricated from clarified polyolefin resins using injection molding techniques (col. 2, lines 3-7). During injection molding of polyolefin resins, small bubbles (i.e., “white points”) form in the side walls of injection molded housewares and medical devices (col. 2, lines 7-10).

The Mannion Patent also refers to another type of bubble, known as “fish eyes,” that reportedly may form in articles of manufacture made of clarified polyolefin resin that are heated too close to the melting point of the resin (col. 2, lines 34-39). Therefore, when reading the Mannion disclosure, a person of ordinary skill in the art would realize that “bubbles” form in clarified polyolefin resins for a variety of different reasons. One type of “bubble,” the “white point,” forms when injection molding polyolefin resin, and another type of “bubble,” the “fish eye,” is caused by heating the resin near its melting point. The

Mannion Patent clearly states that the technique it addresses “white point” bubbles (col. 3, lines 8-13). The Mannion Patent does not teach, or even suggest, that its technique reduces “fish eyes” as referred to in the present claims.

The fact that the Mannion Patent addresses “white point” bubbles and not “fish eyes” is made even clearer by the description of how “white point” bubbles are measured. Specifically, the Mannion Patent teaches that after injection molding compounded resin pellets, resin plaques were visually inspected for the presence of “white point” bubbles (col. 9, 15-23). While the Mannion Patent teaches that the “white point” bubbles were eliminated (col. 9, lines 45-48), it is silent about the population of “fish eyes” as referred to in the present claims. While the reference refers to “fish eyes” it is clearly not addressing the formation of fish eyes, nor is it measuring their presence as required by the present claims.

Plainly, the only defects the Mannion Patent tested, in the resin plaques, were large “white point” bubbles formed during injection molding. Only defects large enough to be detected by the naked eye were considered by the Mannion Patent. On the other hand, “fish eyes” are caused by a different mechanism and are small enough that they may not be detected by the naked eye (See instant specification, page 3, lines 8-13, and originally filed Fig. 1A). As recited in claim 1, “fish eyes” have “a diameter of at least 80 μm included in said protecting film (C)” and do not “exceed 5 fish eyes/ m^2 when measured under a microscope at a multiplication of 100.” But the visual inspection test performed in the Mannion Patent cannot detect defects smaller than 89 μm because this is the resolution limit of the human eye (See the NDT Resource Center webpage, of record; and the Appendix of Amendment (G), filed September 24, 2004).

In other words, the injection molded resin plaques taught by the Mannion Patent may be riddled with thousands of “fish eye” defects too small for the human eye to detect while being free of large “white point” defects.

iii. The Hoffman Patent

United States Patent 4,710,446 to Hoffman et al. (hereafter, the Hoffman Patent) teaches “photosensitive recording materials” for the production of lithographic printing plates or resist images that include a photosensitive, photopolymerizable recording layer, wherein the recording layer contains a polymeric binder provided by a copolymer soluble or dispersible in aqueous medium and a comonomer (See Abstract). The comonomer is an anhydride of a polymerizable, ethylenically unsaturated monocarboxylic acid (See Abstract). The Hoffman Patent teaches that 2,4,5-triarylimidazole dimers are suitable photoinitiators for the photosensitive, photopolymerizable layers (col. 6, lines 9-37).

The Hoffman Patent is completely silent regarding the formation of “fish eyes” in a protecting film.

The Examiner’s rejection of claims 12 and 27, under 35 U.S.C. § 103, in view of Taguchi and Mannion, and in further view of Hoffman is untenable for the following reason. The Taguchi Patent relates to a photopolymerizable element. The Hoffman Patent relates to photosensitive recording materials, and has nothing to do with photopolymerizable elements. There is simply nothing about the Hoffman Patent that pertains to the prevention of air voids and fish eyes. Therefore, there would be no reasonable motivation to combine the teachings of the Hoffman Patent with the teachings of the Taguchi Patent.

iv. The Section 103 Rejection

The Section 103 Rejections are untenable and must be withdrawn because the subject matter scope and content of the Taguchi Patent, the Mannion Patent, and the Hoffman Patent is insufficient to establish a prima facie showing of obviousness. Most importantly, neither the Taguchi Patent, the Mannion Patent, nor the Hoffman Patent teach, or suggest, a “protecting film” wherein “the number of fish eyes having a diameter of at least 80 μm included in said protecting film... does not exceed 5 fish eyes/ m^2 when measured under a microscope at a multiplication of 100” as recited in independent claims 1, 19, 36, 38 and 42-46. However, these references, even when combined, also fail to teach, or even suggest, “the photosensitive resin composition in the photosensitive resin layer comprises: i. a binder polymer formed by copolymerizing acrylic acid or methacrylic acid and alkyl esters thereof as constituent monomers; ii. a monomer having at least one polymerizable ethylenically unsaturated group in the molecule thereof, wherein the monomer is bisphenol A polyoxyalkylene diacrylate, or contains bisphenol A polyoxyalkylene dimethacrylate as a component; and iii. a photopolymerization initiator” as recited in independent claims 42 and 43, and they also do not teach, or suggest, “the protecting film... is made of resin filtered after thermal melting” as recited in independent claims 44-46.

However, this is not the only flaw in the Examiner’s Section 103 rejections. A proper rejection under Section 103 further requires showing (1) that the prior art would have suggested to a person of ordinary skill in the art that they should make the claimed device or carry out the claimed process, (2) that the prior art would have revealed to a person of ordinary skill in the art that in so making or doing, there would have been a reasonable expectation of success, and (3)

both the suggestion and the reasonable expectation of success must be found in the prior art and not in the applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

In the present case, the Examiner has not shown that the relied upon references provide both the suggestion to combine and the reasonable expectation of success if the references were combined.

First, the proposed combination of the Mannion Patent with the Taguchi Patent is technically unreasonable. The presently claimed invention does not require the addition of a clarifying agent. Furthermore, the references fail to provide some suggestion, teaching, or motivation to add a clarifying agent to a photosensitive film, or any of the components thereof such as the support film (A), the photosensitive resin layer (B), or the protecting film (C). This deficiency is magnified by the fact that the teachings of the Mannion Patent are intended to apply to polyolefin resin articles manufactured by injection molding techniques (col. 3, lines 8-13, and col. 9, lines 15-18) whereas the formation of polyolefin films require completely different techniques such as inflation method, T-die method, or stretching method (See Toshiaki Okiyama (ed.), PLASTIC FILMS – PROCESSING AND APPLICATIONS, 2nd Ed., at 89, Table 2.12 (of record)).

For all of the above reasons, the Examiner has failed to show that the references provide some suggestion, teaching or motivation to justify the combination.

Second, even if the references were combinable (which they are not), the references fail to teach a reasonable expectation of success with respect to arriving at Applicants' claimed invention. Specifically, the Mannion Patent addresses "white points" formation during injection molding and does not address "fish eyes" formation during resin melting and heating processes. Even the visual tests employed by the Mannion Patent to inspect injection molded resin plaques

were insufficient to detect the smaller dimensioned “fish eyes” recited in the independent claims. Consequently, there can be no reasonable expectation, taught by the references, that by combining the teachings of the Taguchi Patent, the Mannion Patent, and the Hoffman Patent there would be successful elimination of “fish eyes” too small to be detected by the inspection methods employed by the Mannion Patent.

For all of the above reasons, including insufficient scope and content of the references, insufficient suggestion to combine, and failure to provide a reasonable expectation of success, the Examiner has failed to establish a prima facie showing of obviousness against the presently claimed invention.

v. Indicia of Nonobviousness

A patentability analysis under 35 U.S.C. § 103 requires (a) determining the scope and content of the prior art, (b) ascertaining the differences between the prior art and the claimed subject matter, (c) resolving the level of ordinary skill in the pertinent art, and (d) considering secondary considerations that may serve as indicia of nonobviousness or obviousness. Graham v. John Deere Co. of Kansas City, 148 U.S.P.Q. 459, 467 (1966). In the present case, even if the Examiner had established a prima facie case of obviousness (which she has not), the evidence of superior and unexpected results provided in the present specification is indicia of nonobviousness sufficient to overcome the prima facie case.

As shown in Table 2 of the specification as originally filed, the present invention is directed to using a number of different protecting films (see Table 2) that provide remarkably flawless photosensitive films (i.e., air voids of only 0-5 per m²). In particular, when a

photosensitive film is made, in accordance with claims 1, 19, 36, 38 and 42-46 of the present invention, utilizing a polypropylene protecting film such as employed in Example 2 (i.e., having zero fish eyes), is compared to a photosensitive film made using a different polypropylene protecting film such as employed in Comparative Example 2 (i.e., having about 1,200 fish eyes per m^2), the result is that the photosensitive film of Comparative Example 2 has about 1,000 air voids per m^2 , whereas all of the Examples 1-3 made in accordance with the present have about 0-5 air voids per m^2 !

These results plainly demonstrate superior and unexpected results. See In re Soni, 34 U.S.P.Q.2d 1684, 1688 (Fed. Cir. 1995) (“when an applicant demonstrates *substantially* improved results,...and *states* that the results were *unexpected*, this should suffice to establish unexpected results *in the absence of* evidence to the contrary.”). While generally the claimed invention must be compared to the closest prior art, In re Johnson, 223 U.S.P.Q. 1260, 1264 (Fed. Cir. 1984), the Applicants may compare the claimed invention to subject matter closer to the invention than the closest prior art. Ex parte Humber, 217 U.S.P.Q. 265, 266 (Bd. Pat. App. & Inter. 1981).

In the present case, Examples 1 and 2 of the Taguchi Patent represent the closest prior art. However, the comparison shown in Table 2 of the present application compares subject matter that is closer to the presently claimed invention than the subject matter taught by the Taguchi Patent. As described on page 15, line 20, to page 18, line 14, the Examples 1-3 and Comparative Example 2 were prepared using the same methods and materials for making the photosensitive resin composition-containing resin layer and used the same supporting film (i.e., polyethylene terephthalate film). On the other hand, the photosensitive resin composition-containing resin layer taught in Examples 1 and 2 of the Taguchi Patent contains

different components, as evident from col. 16, lines 30-43, and col. 17, lines 20-25, and employs a different supporting film (See Taguchi Patent, col. 16, lines 46-50; and col. 17, lines 25-32).

Therefore, the presently claimed invention has been compared to subject matter (i.e., Comparative Example 2 of Table 2 of the original disclosure) that is closer to the invention than the subject matter of the closest prior art (i.e., Examples 1 and 2 of the Taguchi Patent). In view of these facts, Applicants have provided ample comparative evidence of superior and unexpected results sufficient to overcome any prima facie showing of obviousness (although no prima facie case of obviousness has presently been made by the Examiner).

E. Claims 38, 42 and 43

The Taguchi Patent teaches the disadvantages of polyethylene terephthalate support films (col. 2, line 38, to col. 3, line 8), and instead teaches using methyl methacrylate homopolymer and copolymers and various other materials (col. 4, lines 50-60). The Taguchi Patent actually teaches away from the use of polyethylene terephthalate support films. Therefore, the Taguchi Patent does not teach the subject matter of independent claim 38, which recites “the support film is selected from the group consisting of polyester films and polyethylene terephthalate films.”

In addition, the Taguchi Patent does not teach, or even suggest, that “the photosensitive resin composition in the photosensitive resin layer comprises: i. a binder polymer formed by copolymerizing acrylic acid or methacrylic acid and alkyl esters thereof as constituent monomers; ii. a monomer having at least one polymerizable ethylenically

unsaturated group in the molecule thereof, wherein the monomer is bisphenol A polyoxyalkylene diacrylate, or contains bisphenol A polyoxyalkylene dimethacrylate as a component; and iii. a photopolymerization initiator” as recited in claims 42 and 43.

Applicants point out that the Examiner has previously admitted that the Taguchi Patent does not teach these elements recited in claims 42 and 43 (See Office Action dated March 24, 2004, at 4, line 13, to at 5, line 5).

G. Thermal Melting and Claims 44-46

The Taguchi Patent does not teach, or even suggest, that “the protecting film (C) is made of resin filtered after thermal melting” as recited in independent claims 44-46. The Examiner has made no effort to show where in the Taguchi Patent, the Mannion Patent, or the Hoffman Patent, this limitation is to be found.

Applicants remind the Examiner that when the PTO asserts that there is an explicit or implicit teaching in the prior art, the PTO must indicate where such a teaching appears in the reference. In re Rijckaert, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1993). In the present case, the Examiner has made no effort to show where in the Taguchi Patent, the Mannion Patent or the Hoffman Patent, there is a teaching, or a suggestion, that “the protecting film...is made of resin filtered after thermal melting” as recited in claims 44-46. Consequently, the Examiner must indicate where such a teaching appears in the Taguchi Patent, the Mannion Patent or the Hoffman Patent, or withdraw the Section 103 Rejection standing against claims 44-46.

III. CONCLUSION

The Examiner's rejection under 35 U.S.C. § 103 is untenable and should be withdrawn because neither the Taguchi Patent, the Mannion Patent, nor the Hoffman Patent, teach, or even suggest, a "protecting film" having a "fish eye" population with "the number of fish eyes having a diameter of at least 80 μm included in said protecting film does not exceed 5 fish eyes/ m^2 when measured under a microscope at a multiplication of 100" as recited in independent claims 1, 19, 36, 38 and 43-46.

In addition, neither the Taguchi Patent, the Mannion Patent, nor the Hoffman Patent, teach, or even suggest, "the protecting film (C) is made of resin filtered after thermal melting" as recited in independent claims 44-46.

The Examiner's Section 103 rejection is also untenable because there is no teaching, motivation, or suggestion provided by the references to justify the combination. On the contrary, a person of ordinary skill in the art would realize that the combination is unreasonable. Furthermore, the references fail to provide a reasonable expectation of success of achieving the claimed invention even if the combination were made. Specifically, the Mannion Patent teaches eliminating "white points" and not "fish eyes" and the visual inspection procedure employed by the Mannion Patent is insufficient to detect "fish eyes" that are smaller than the human eye can see. Consequently, the Mannion Patent fails to teach that defects smaller than the human eye can see, such as "fish eyes" included in the present claims, are eliminated by employing its methods and materials.

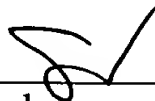
Lastly, even if the Examiner had established a prima facie case of obviousness, which the Examiner has not done, the Examiner has not considered the ample evidence of superior and unexpected results achieved by the presently claimed invention over the teachings of the Taguchi Patent, which is the closest prior art.

For all of the above reasons, claims 1-10, 12-19, 21-25, 27-38 and 42-46 are in condition for allowance, and a prompt notice of allowance is respectfully requested.

Questions are welcomed by the below-signed attorney for applicants.

Respectfully submitted,

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